European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 07, Issue 5, 2020

Buccal Pad Of Fat And Its Applications In Oral And Maxillofacial Surgery – A Review

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ABSTRACT :
Buccal fat pad is an extremely good graft which is used in oral and maxillofacial surgeries. It was recognized in the early seventeenth century, but its use was popularized after the eighteenth century . This article is a brief review on the applications of buccal pad of fat in oral and maxillofacial surgery such as reconstructive procedures , oroantral fistula, oral sub-mucous fibrosis, resections, reconstructions cases.

KEYWORDS: *Buccal fat pad, graft, Oroantral fistula, oral sub-mucous fibrosis, resections, reconstructions.*

INTRODUCTION :

One of the most popular and commonly used grafts for the closure of oronasal and oroantral communications and for closure of post surgical maxillary defects is the buccal pad of fat . The usage of BFP has gained value in the last 3 decades . BFP has become a well established tool in the field of oral and maxillofacial surgery for the closure of oro antral communications and also for the reconstruction of small to medium-sized soft tissue and bony defects in the oral cavity .Heister in 1732, first described buccal pad of fat . He described that it was glandular in nature and termed it the "glandula molaris." It is a simple lobulated mass consisting of a central body and 4 extensions: buccal, pterygoid, pterygopalatine, and temporal[1]. The main body is situated within the posterior maxilla and upper fibers of the buccinators and is covered with a thin capsule. The buccal extension lies superficially within the cheek and plays an important role in cheek contour. The pterygopalatine extension of the buccal pad fat tissue extends to the pterygopalatine fossa and inferior orbital fissure. It stays in the pterygo mandibular space and packs the mandibular neurovascular bundle and lingual nerve. The temporal extension consists of 2 parts : superficial and deep. Each of these processes has its own capsule and is attached to the surrounding structures by ligaments. The size of the pterygoid and temporal extension is not usually fixed , but is smaller than the body or buccal extension.

TECHNIQUE TO HARVEST BUCCAL PAD OF FAT :

Under either local or general anesthesia, an upper mucosal incision posterior to the zygomatic buttress is made, following which a simple incision through the periosteum and fascial envelope of the BFP is placed. Blunt dissection is then carried out , anterior and medial to the coronoid process in order to expose the yellow colored buccal fat. Blunt dissection is further carried out to pull out the emergent part and to dissect the tissues surrounding the BFP. Mechanical suction must be avoided once the BFP is exposed. It is gently pulled out from its bed with a vascular clamp. External pressure in the temporal and lateral orbital region is usually applied to aid the removal of the temporal process of fat. Based on the amount of fat required, various processes of fat pad can be manipulated and can be used as either a pedicled or a random flap.

APPLICATIONS OF BUCCAL PAD OF FAT IN OMFS :

BFP IN CLOSURE OF OAC/ OAF :

The pedicled type of BFP has been used for the closure of OAC / OAF. Buccal pad of fat is in an anatomically favourable position , it can be harvested quite easily , has a low failure rate and a good rate of epithelialization . Dolanmaz et al. quoted that the pedicled BFP flap is an acceptable and reliable option for the management of acute or chronic OAC, and was found to be the best choice of treatment in recurrent OAF[2]

. Haraji and Zare, reported that OAF closed with the BFP healed with good esthetic outcomes and there were no disturbances in mastication[3] . It was observed that there was very minimal obliteration of the vestibule in the closure of OAF with buccal pad of fat as compared to closure with buccal advancement flap. The healing was also found to be satisfactory. Some of the few complications pbserved while using BFP include mild obliteration of vestibule and recurrence of OAF .

TREATMENT OF ORAL SUBMUCOUS FIBROSIS :

Buccal pad of fat was found to provide excellent function , good esthetic outcome and was thereby found to be a better substitute in comparison to nasolabial flap , tongue flap and split skin graft[4] . There was decreased post operative morbidity and good patient acceptance .

RECONSTRUCTION OF POST EXCISION DEFECTS :

Defects caused by the excision of various pathologies , cancer involving the maxilla etc. can be closed with the help of buccal pad of fat. The BFP can be applied right from the angle of mouth to the retromolar trigone and palate . The site in which the BFP has been most often used for reconstruction after tumor resection is the hard palate . Studies show that defects upto 6 cm have been successfully closed using BFP [5]. A guideline has been laid down for maxillary defects: 4 cm and up to 6 cm for buccal or retromolar defects. Some of the complication include postoperative infection , fistula formation , partial or complete loss of flap, limitation in mouth opening, depressed cheek ,hematoma, and hemorrhage[6]. Hollowness of the cheek could be due to the excessive amount of fat harvested for larger defects .

PRIMARY CLEFT PALATE REPAIR USING BFP :

Levi et al. studied the use of pedicled BFP in conjunction with the Furlow repair and the hard palatal 2-flap procedure for closure of primary cleft palate, and observed that it requires less dissection and reduced donor site morbidity of this material[7] . It was stated that an added layer of vascularized tissue (the BFP flap) will help to fill the open denuded space, increase vascularity to the area, and prevents significant wound contracture.

BUCCAL PAD OF FAT IN TEMPEROMANDIBULAR JOINT RECONSTRUCTION :

Rattan stated that BFP is the perfect alternative to autogenous or alloplastic temporomandibular joint (TMJ) reconstruction after TMJ ankylosis release [8]. The rationale for placing fat around the joint is to obliterate dead space around the joint, thus preventing the formation and organization of hematoma. Thereby it helps to isolate any residual active tissue, such as periosteum, and reactive tissue from previous failed alloplastic implants to the periphery of the region. Hence fibrosis and bone formation are decreased . The advantage of using BPF is that it lies in close proximity to the TMJ and can be easily harvested through the same preauricular approach as used for TMJ exposure, thereby diminishing the chances of any infection. The adequacy of volume and the long term results of the usage of BFP in TMJ reconstruction is not known . Hassani et al. used BFP for sinus augmentation with a mixture of autogenous bone and natural bone mineral, thereby covering the lateral sinus wall . Studies have shown that BFP might be a substitute for the usually used bioresorbable collagen membranes in maxillary and sinus floor bone grafts. It was also observed that BFP helps in good implant survival in the posterior maxillary area [9]. The validity and reliability of using BFP has great scope and requires a lot more research to be carried out .

MISCELLANEOUS USES :

Apart from the above mentioned applications , BFP is also used for certain other purposes . Vocal cord augmentation is one such application wherein an intracordal injection of autologous fat harvested from the buccal fat pad is administered . Khouw et al. used bilateral BFP in combination with a superiorly based pharyngeal flap for palatal recontruction (to lengthen the soft palate)[10]. Some researchers have used pedicled BFP in the coverage of severe gingival recession defects and ave been found to provide a considerable amount of keratinized tissue for coverage of the upper molar teeth .

ADVANTAGES AND DISADVANTAGES :

Some of the advantages of using the buccal pad of fat flap [11]are :

1. Simple and quick to use.
2. The procedure can be done under local anesthesia.
3. No visible scars formation
4. Excision of contralateral buccal fat pad is often not needed.
5. Reduced failure rates and morbidity rates .

The disadvantages of the usage of buccal pad of fat include the following:

1. Only small-to-medium defects can be covered.
2. A small
: depression is caused by the procedure .

CONCLUSION

In conclusion, the buccal pad of fat has been used for a variety of purposes, due to its very good physical and biologic properties. The most common use of BFP continues to be the closure of OACs and post excision defects reconstruction . Although it has immense potential , there is a size limitation for the use of BFP . More studies have to be carried out in this field with long-term follow up to ascertain the use of BFP in cleft palate closure, in TMJ reconstruction, and as sinus floor membrane.

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